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ABSTRACT

This paper describes the Critical Thinking in the Schools/Teacher Education project at Montclair State College (New Jersey) and two reforms to the undergraduate preservice teacher education program carried out under this project: the development of extensive collaboration between the college and the public schools which provide clinical sites for teacher education students; and the infusion of teaching for critical thinking throughout the undergraduate teacher education program. The paper considers: the history of critical thinking and the climate at the college that made the revisions possible; the processes and practices that led to improved collaboration between the college and the public schools, including criteria for identifying collaborating "clinical districts"; the agreement between the college and those districts; the work undertaken with inservice teachers in those districts; and the selection and training of clinical adjunct faculty to serve as cooperating teachers from those districts. The paper also outlines the simultaneous revision in the teacher education program, including the development of goals and philosophy for the teaching of critical thinking, the definition of critical thinking, the preparation of college faculty to teach for critical thinking and to supervise students prepared to teach for critical thinking, and the development of new curricula in the undergraduate program. The paper concludes with an outline of plans for institutionalizing and evaluating the program. (IAH)

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Collaboration for Critical Thinking in Teacher Education: The Montclair State College Model

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Montclair State College
Institute for Critical Thinking

Resource Publication Series
1990

The Institute for Critical Thinking at Montclair State College is designed to support and enrich faculty development efforts toward critical thinking as an educational goal. Guided by a National Advisory Board and a College Advisory Council, its primary purpose is to serve as a catalyst in the development of educational excellence across the curriculum at the College. A collaborative, multi-disciplinary approach is in process, with attention to the study of both the theoretical aspects of critical thinking across the disciplines and their implications for teaching and learning at the college level. Leadership roles have also been assumed in helping other colleges and schools to incorporate critical thinking into their curricula.

As part of this effort, the Institute for Critical Thinking publishes a newsletter, *Critical Thinking: Inquiry Across the Disciplines*, on a monthly basis during the academic year. The newsletter publishes information about the activities of the Institute, as well as brief analyses of various critical thinking issues. In addition, the publication of several series of resource documents are in process. These publications will make available, to interested faculty and others at Montclair and elsewhere, working papers related to critical thinking as an educational goal. These publications will enable those persons interested in critical thinking to have access to more extensive discussions of the kinds of issues that can only be presented in summary form in the newsletter. These discussions will typically be regarded as works-in-progress: articles written as tentative arguments inviting response from others, articles awaiting the long publication delay in journals, etc. The proceedings of our conferences will also be presented in the form of resource publications, as will articles based on our series of lectures, inquiry panels, and faculty seminars and forums.

In this third series of resource publications, we have again included working papers by members and guests of our Institute Fellows "Round Table." Many of these working papers have been presented for discussion at one or more of the Fellows' seminar meetings, and have influenced our thinking about the nature of critical thinking as an educational goal. We have also included papers dealing with practical applications of the Institute's work and of related projects in other settings.

The Institute welcomes suggestions for our resource publication series, as well as for our other activities. Correspondence may be addressed to us at

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Introduction

Like teacher educators and other faculty at institutions across the country, the faculty at Montclair State College have been studying the reports that have been characterized as defining "the second wave of educational reform" for the past several years. While most of the first set of reports, including *A Nation at Risk* had as their primary focus the practices of the K-12 schools, the second wave extended that focus to include teachers and teacher education. The most important of these reports, and certainly the one receiving the most widespread attention is *A Nation Prepared: Teachers for the 21st Century*, prepared by the Task force on Teaching as a Profession of the Carnegie Forum on Education and the Economy. Other reports in the "second wave" include *Tomorrow's Teachers*, the report of the Holmes Group and *Time for Results: The Governors' 1991 Report on Education* published by the Center for Policy Research and Analysis of the National Governors' Association. All the reports were published in 1986..

This paper describes the results of Montclair State College's efforts to begin the implementation of two important educational reforms as part of its initial teacher certification program: (1) the development of extensive collaboration between the College and the public schools which serve as a primary educational site for our teacher education students, a recommendation clearly made in nearly all the reports, and (2) the infusion of teaching for critical thinking throughout the undergraduate teacher education program, a recommendation at least implicit in the reports, and part of a national movement embraced by nearly all major groups of educators. The history of critical thinking and the current climate at the College that made the revisions possible at this time are considered. We then discuss the processes and practices that led to improved collaboration between the college and the public schools, including criteria for identifying collaborating districts, the agreement between the College and those districts, the work undertaken with teachers in those districts, and the selection and training of clinical adjunct faculty to serve as cooperating teachers from those districts. Next we discuss the simultaneous revision in the undergraduate teacher education program including the development of goals and philosophy for the teaching of critical thinking, the definition of critical thinking, the preparation of College faculty to teach for critical thinking and supervise students prepared to teach for critical thinking, and the development of new curricula in the undergraduate program. Finally we report on our plans to evaluate the efforts undertaken to date and steps that must be taken to institutionalize and extend the program to all undergraduate students and to other certification programs at the graduate level.

The Setting

Montclair State College was founded in 1908, and is currently one of

nine state colleges in the New Jersey state college system. It is the largest of the colleges, with a headcount of approximately 13,000 students. The College has approximately 7,000 full time undergraduate students, with about 10% of these in some stage of the undergraduate teacher education program. At the undergraduate level, the College offers certification in all the standard secondary teaching fields, as well as K-12 specialist areas such as music, home economics, physical education, health, art, and industrial arts. All students major in the field they will teach, completing essentially the same major courses as other students in that major who are not seeking certification. Students seeking certification apply for admission to teacher education usually in the sophomore year, and, if admitted, complete a professional sequence of 30 credits under the auspices of the School of Professional Studies. The sequence includes field experiences each year and culminates in a full semester of student teaching in the Senior year. Some programs extend beyond four years, and nearly all require more than the usual 128 credits required for graduation. The programs are approved by the New Jersey Department of Education using NASDTEC standards and accredited by NCATE. The program is administered by an Office of Teacher Education within the School of Professional Studies.

The project described in this paper, the Critical Thinking In the Schools/Teacher Education project, is part of a larger effort in critical thinking at the College and builds on the base of work in the field done through the Institute for the Advancement of Philosophy for Children and its Philosophy for Children Program as well as Project THISTLE: Thinking Skills in Teaching and Learning. The College's Philosophy for Children Program, under the direction of Matthew Lipman, has gained an international reputation for its work for the last fifteen years involving the use of philosophy and reasoning with language to develop children's thinking ability. The project works primarily with in-service teachers, training them to use a series of philosophical novels written for children as a vehicle to develop critical thinking abilities. In addition a graduate level initial certification program using Lipman's approach is offered by the School of Professional Studies. Several College faculty working in the undergraduate teacher education program have also worked in Lipman's program. Lipman has reported success in raising the scores of children taught through the program on tests of reasoning ability (Shipman, 1983).

Montclair State College faculty involved in Project THISTLE (Oxman & Michelli,1989), have worked with more than 300 Newark public school teachers since 1979. Project THISTLE consists of a sequence of six coordinated graduate courses, totalling 18 graduate credits, with extensive classroom follow-up and supervision. These courses are designed to improve the curriculum development and teaching ability of participants so that critical thinking, conceived of in this project as higher order basic skills, is infused into the regular curriculum of the schools. Oxman (1984) found significant gains in the reading comprehension of students of the Newark teachers who participated in the project. Her conclusions suggest that, "cognitive growth and improvement in reading ability will occur

simultaneously to the degree that meaningful intellectual activity--reflective thinking--occurs in our classrooms." More than a dozen faculty working in the regular undergraduate teacher education program have worked in Project THISTLE since its inception, and most continue to do so. Thus there was a core of faculty at the College who believed that the development of higher order thinking skills--whether called critical thinking, reflective thinking, or problem solving--was an important educational goal. The School of Professional Studies has sought a vehicle to extend the extensive experience with in-service teachers in this area to the undergraduate program.

In addition, it was clear even before the reform reports that improved collaboration with the public schools, especially as it related to the selection and training of cooperating teachers, was an important goal. Like many colleges, Montclair State College depended upon the public schools to select the cooperating teachers, hampered by a very minimal reward structure that paid cooperating teachers only $50 for working with a student teacher for a semester, a fee often split between two teachers in areas requiring elementary and secondary experience.

Beginning in 1987-88 the College established the Institute for Critical Thinking, also under the direction of Wendy Oxman, with a three year, $1.1 million grant from the New Jersey Department of Higher Education through the Governor's Challenge Grant program. The Institute uses a collaborative, multi-disciplinary approach with attention to the study of both the theoretical aspects of critical thinking across the disciplines and their implications for teaching and learning at the college level. Thus, through the work of the Institute, College faculty from all disciplines are exposed to and consider the issues related to teaching for critical thinking. One of the many projects funded through the Institute for Critical Thinking with additional funding from the School of Professional Studies is the Critical Thinking In the Schools/Teacher Education project, designed to accomplish the long-standing goals of extending teaching for critical thinking to the undergraduate teacher education program and to use this opportunity as a vehicle to improve collaboration between the College and the public schools.

Thus, there existed at the College a core of faculty interested in and committed to teaching for critical thinking, a recognition of the need to improve collaboration college/school, and, with the establishment of the Institute for Critical Thinking, a funding source to undertake extensive revision initially in a pilot project, but with a commitment to extend the innovations to the entire undergraduate teacher education program. A small planning group, consisting of the Dean of the School of Professional Studies, the Director of Teacher Education, the Director of the Institute for Critical Thinking and a faculty member who served with the Director of Teacher Education as co-coordinator of the project for the first year began meeting early in the Summer of 1987 to develop an outline for the project. During the academic year 1987-88, a larger Steering Committee was formed which

included the original planning committee, representatives from each of the College's five Schools, students in the teacher education program, and representatives of the public schools. The Steering Committee met weekly during the first year of the project planning the initial stages. As part of the plan to regularize and institutionalize the work of the project, the functions of the Steering Committee were subsequently transferred to the College's regular Teacher Education Policy Committee which recommends all policy and curricular changes in the teacher education program and has membership similar to the original Steering Committee. The original planning committee continues to meet regularly.

Toward Collaboration with the Public Schools

The Carnegie Forum 1986 report, *A Nation Prepared: Teachers for the 21st Century* was quite explicit urging the collaboration between colleges and "clinical schools." The report said:

> Clinical Schools, selected from among public schools and staffed for the preparation of teachers, must be developed. . . .These institutions, having an analogous role to teaching hospitals, should be outstanding public schools working closely with schools of education. . . .The clinical schools should exemplify the collegial, performance-oriented environment that newly certified teachers should be prepared to establish. By connecting elementary and secondary education and higher education in a much more direct way than is typically the case now, these new institutions will create a valuable linkage between the elementary and secondary schools, the schools of education and the arts and sciences departments *(p. 76)*

While in the Carnegie model, these schools would be part of a graduate level program, elements of the concept--the selection of the best schools, working to create an environment in which teachers would find the best educational practices, and carefully selecting cooperating teachers who would then join the College faculty and collaborate on teacher education policy and practices--clearly had implications for an undergraduate program as well. Several criteria were established to initially invite districts to attend a meeting at which the full program would be described. These criteria included:

> --size of the district, with an emphasis on those districts large enough to accommodate at least four or five students at each stage of the program so that teachers working in the program could collaborate with each other;

--poverty level index, with a focus of selecting districts with a variety of economic statuses, in part to assure some ethnic and racial mix among the districts selected;

--reputation for excellence and innovativeness, based on the experience of our faculty with school districts surrounding the College;

--history of cooperation with the College, so that the kind of commitment needed was likely to be forthcoming.

At least initially, schools invited were limited also to a thirty-mile radius of the College to facilitate attendance at what we expected would be a rather large number of initial meetings. Superintendents and their guests from fifteen districts meeting the criteria were invited to a luncheon to discuss the proposed program, and twelve accepted the invitation. At the luncheon, held on campus, a broad outline of the proposed program was presented. Essentially, the superintendents were informed of the work of the College in the area of critical thinking, and of our interest in working collaboratively with outstanding schools in the teacher education program. Specifically, the program required that districts agree:

--to select jointly with the College outstanding teachers who would be appointed as clinical adjunct faculty of the College;

--to accommodate a minimum of five students in field experiences in the schools in each year of their programs;

--to permit the participation of clinical adjunct faculty in periodic policy planning meetings and in training sessions during the academic year;

--to work with the College to develop a staff development program in critical thinking for other faculty in their schools, with College faculty participation, to insure an environment conducive to the success of our students.

All districts present expressed interest in pursuing the idea further. In early November, 1987 a letter was sent by the Director of Teacher Education, Robert Pines, to each superintendent outlining the program and expectations of "clinical districts" in greater detail. The following expectations and activities were identified for the first two years of the project:

Academic Year 1987-88

1. Identification of district and College personnel to (a) undertake joint curricular development for instruction in critical thinking in both settings and to (b) plan and prepare for related staff development activities. Persons selected should be those whose job descriptions normally provide for such responsibilities.

2. Identification of district and College personnel to jointly develop criteria and procedures for the selection of district teachers to serve as "clinical adjunct faculty" at the College. Those teachers selected will receive formal appointment at the College to include campus privileges and an honorarium for their work with junior field experience students and senior teaching interns from Montclair State College.

3. Selection of the "College" by a joint district/College committee. A minimum of 12 district teachers will be so identified.

4. Designation of College and school district personnel roles required for the cooperative administration of the project, roles required for the cooperative administration of the project, and the identification of persons to assume those roles in each setting.

5. Provision of summer training by the College, to both College and district faculty, who will, in turn, train students from Montclair State College. Payment for trainers and training will be provided by the College.

Academic Year 1988-89

1. Placement of junior field experience and senior intern students from the College in participating clinical districts. The distribution from students across the districts will be identical in number. A total of sixty juniors (30 per semester) and 30 senior interns (spring semester) are projected for placement. The Office of Teacher Education at the College will be responsible for screening students and coordinating their placement with clinical adjunct faculty members in the schools. Students so placed as juniors will normally be assigned to the same adjunct faculty members for the senior internship. Payment to the

faculty will be made by the College at the conclusion of the senior internship.

2. Implementation of the curriculum for the development of critical thinking at both the College and in the Schools. Implementation in the schools will minimally occur within the classrooms of the College who are working with students from Montclair State College. Implementation beyond the classroom level can be sought as deemed appropriate by each district, but will include at least in-service education opportunities for all faculty in the schools selected. The College will support those efforts, which are projected to occur on a 'turn-key' basis.

3. Implementation of school district and College faculty development activities (classroom based and follow-up summer training). Payment of training personnel from the College will be provided by Montclair State College.

4. Provision of summer training for College and district faculty who have worked during the current year with students from the College and/or will do so during the 1989-90 academic year. Payment for trainers and training will be provided by the College.

Twelve district wrote back accepting the conditions as outlined. Many of them were particularly interested in joining the project because they planned district work in critical thinking. One superintendent wrote, "We believe that this project will be an exciting challenge for our district and mesh beautifully with our district's own initiative to integrate a thinking skills program into our existing curriculum. Therefore, we accept your invitation to become a 'clinical district' and to work with you to make this project a reality." After subsequent discussion with the Superintendents in these districts, a total of five districts were selected for the initial pilot. The other districts will be used in subsequent years, and the process repeated to select additional districts as the program is expanded to include all undergraduate teacher education students.

In February, 1988 a letter, signed by the Director of Teacher Education and the Superintendent of Schools, was sent to every teacher in the selected teachers whose field of expertise matched one of the College's certification areas describing the project and inviting them to apply to become a College member of the College. They were told that, if successful, they would be formally appointed to that position, would be expected to attend a three day intensive training program during the subsequent summer focussing on critical thinking and the supervision of student teachers, to work with College faculty in the following year to improve their

skills in teaching for critical thinking, to participate in follow-up training, to participate in policy setting activities for the teacher education program and to supervise one student in the junior practicum and subsequent senior internship experience. In return, along with their appointment, they would have access to College libraries and computer laboratories, and special parking privileges, perhaps the most attractive offer! In addition, they would be paid $100 for participating in the summer training program for which they could also earn one graduate credit if they paid tuition and completed a scholarly project and $300 for working with a student in the junior and senior years. The latter honorarium, although still small by some standards, represented a significant increase over the usual $50 usually paid cooperating teachers. A sufficient number submitted applications, which included resumes and a statement expressing their reasons for interest in supervising beginning teachers and teaching for critical thinking, to permit selectivity in identifying clinical adjuncts. One teacher wrote:

> I would like to be part of the Montclair State College Project for Critical Thinking in Teacher Education because I see this project as a way to establish effective instruction in our school system right now. But, in addition, we can insure that this program can continue in the future by modeling critical thinking methods and strategies for teachers-in-training. Responsibility, challenge, progress, excellence are words that come to mind when I think of this project. How exciting and meaningful involvement would be! I enjoy working with young adults and know something about their lives since I am the mother of a college student. I would like to share with them the techniques I've tried and found to be worthwhile.

With the selection of the first sixty clinical adjunct faculty, the College had moved into an era of enhanced selectivity and collaboration in the selection and subsequent training of a group that plays one of the most critical roles in the education of teachers.

Toward Teaching for Critical Thinking in Teacher Education

One of the first tasks of the Steering Committee early in the project was the definition of the meaning of critical thinking within the project and the development of a philosophy and goals for the critical thinking aspect of the project. Critical thinking, as anyone who has reviewed the literature knows, has many divergent meanings. Frequently critical thinking is seen as a subset of teaching for higher order thinking and reflective thinking, and implies an approach to the teaching of thinking that focuses on the analysis of arguments through the kind of logical reasoning most often associated with philosophy. The Steering Committee, not surprisingly, took the lead of the extensive work of the Institute for Critical Thinking and

adopted a definition based on the work of Lipman and Project THISTLE. Critical thinking was defined as skillful, responsible thinking that facilitates good judgment because it relies on criteria, is self-correcting and is sensitive to context. The definition was extended to include reflective inquiry and creativity and sees critical thinking as involving both dispositions and abilities. The definition has proved especially powerful because of its utility in the analysis of ideas within the content of the disciplines, but also the analysis of the professional judgments teachers make. A given judgment, for example the decision to make a particular assignment in preparation for a lesson, can be analyzed from the perspective of the extent to which it relies on explicit criteria, is subject to self-correction based upon reflection, and is sensitive to the particular context in which the instruction occurs. Further, it is important to note that good judgments do not necessarily lead to good outcomes, but the quality of the outcomes become a basis for further self-correction and the improvement of subsequent judgments.

A second major task of the Steering Committee was the development of a cohesive philosophy for the critical thinking portion of the program. The philosophy, initially developed by Mark Weinstein, Associate Director of the Institute for Critical Thinking, and revised after much debate, states that:

> Critical Thinking as an educational ideal is, most fundamentally, a commitment to students and teachers as rational and autonomous persons. This implies that students are treated as capable of giving and responding to reasons whatever their developmental level. Creative engagement based on mutual respect and empathy, a commitment to logic and truth, and openness to inquiry express this ideal in the classroom.
>
> Education incorporating this critical ideal results in reflective teachers and students, thoughtful citizens and persons committed to lifelong learning. Students experienced in critical thinking acquire understanding as well as information. Love of learning and wisdom are the results of critical thinking as an educational ideal. Teachers committed to critical thinking are open and growing professionals, creative in the use of curriculum and sensitive to students as individuals. Respect for the subject, excellence in good thinking and skill in supporting inquiry are hallmarks of teaching for critical thinking.
>
> In the curriculum, critical thinking results in deeper understanding of information through the identification and application of criteria appropriate to the context at hand. Critical thinking requires the

creative use of information, directed by the needs of inquiry and governed by principles of logic, methodology and communication. The dispositions and skills necessary for critical thinking are acquired through critical inquiry in the classroom. They are applied to all aspects of learning and are reflected in independent and creative thought.

In the classroom, critical thinking engenders an open and supportive environment. Students and teachers are committed to supporting claims with good reasons, identifying and evaluating assumptions and exploring alternative perspectives. Through discussion and cooperative inquiry, students and teachers learn to welcome alternative points of view, to tolerate ambiguity, to face intellectual challenge and to abandon or modify positions in response to valid criticism. Clarity and creativity are valued in classroom inquiry. Acquiring and applying information, solving problems, and evaluating and communicating ideas result from collaborative and individual efforts.

Aspects of critical thinking must be specifically taught. The goal, however, is to incorporate critical thinking dispositions and abilities into all aspects of the curriculum. In this way students and teachers develop the intellectual and psychological abilities that support the transfer of critical thinking to all aspects of life. Attitudes and skills, intellectual openness and integrity are applied in school and out, resulting in well educated citizens and competent adults.

Critical thinking in education includes critical assessment, reflecting the special character of critical thinking through the development and use of a variety of appropriate techniques. The assessment of critical thinking takes the entire curriculum into account. Student achievement in basic skills and mastery of the range of school subjects are used as a measure of success in critical thinking.

The next task involved the identification of goals for the project. These were stated as follows:

> The Teacher Education Program at Montclair State College incorporates critical thinking as a thematic element to promote (a) a distinctive and unified conception of teaching based upon the existing body of professional knowledge, and (b) coherence and articulation among

course offerings and clinical experience. The faculty and students seek:

1. To achieve a climate which promotes inquiry, objectivity, open-mindedness and respect for diverse viewpoints.

2. To establish a "community of inquiry" as a context for intellectual exchange and rational thought.

3. To explore the consequences of critical thinking for teaching and learning.

4. To model critical thinking dispositions and abilities.

5. To understand methods appropriate to teaching "for," "of," and "about" critical thinking, and to acquire skill in their application.

6. To understand how critical thinking can be integrated within and across the disciplines.

7. To participate in sequenced and developmental clinical experiences beginning early in the program, and providing practice in teaching for critical thinking.

8. To empower teachers and students to be autonomous and critical thinkers in school and society.

9. To provide public schools with teachers committed to critical thinking who possess the requisite knowledge and skill.

10. To develop and implement a framework for evaluation which incorporates the principles of critical thinking.

Needless to say, the philosophy and goals generated considerable discussion when they were more widely shared. The opening concepts of the philosophy alone are, to some, controversial and clearly not shared by all. "Critical Thinking as an educational ideal is, most fundamentally, a commitment to students and teachers as rational and autonomous persons. This implies that students are treated as capable of giving and responding to reasons whatever their developmental level. Creative engagement based on mutual respect and empathy, a commitment to logic and truth, and openness to inquiry express this ideal in the classroom."

The initial discussion of the philosophy and goals occurred at a two day retreat for faculty in teacher education from across the campus as well as representatives from the clinical districts. Participants examined alternative models for the teaching of critical thinking as well as some of the important issues in any critical thinking program such as the different conceptions of critical thinking found across the disciplines and the question of whether critical thinking skills could only be taught within disciplines or could be accomplished discreetly. One outcome of the retreat was a decision to include even more representatives of the clinical districts in the planning of the summer training program.

A decision with some risk was made to develop a course in the teaching of critical thinking as part of the undergraduate curriculum. The goal of the project and the Institute for Critical thinking is to infuse teaching throughout the curriculum of the teacher education project and, indeed, throughout the College curriculum. Until that happens, a course with a focus on critical thinking is necessary, but its very presence may cause faculty to rely on that course and engender reluctance to modify other aspects of at least the teacher education curriculum. To counter this possibility, workshops with teachers of the subject area methods courses, taught in the major departments of the students, have been undertaken in earnest in the 1988-89 academic year. Key faculty from the School of Professional Studies have begun meetings with small groups of teachers of methods courses from across campus.

Two sections of the course, to be required ultimately of all juniors, were taught to the pilot group of students in the Fall, 1988. The objectives of the course are:

A. Students will model the skills of good teaching: including modeling, goal setting, problem posing, wait time, quality responding and peer interaction, transfer and metacognitive awareness.

B. Students will model strategies for challenging students to engage in appropriate, complex thinking processes within their subject areas, individual and small group problem solving, the consideration of values, "thinking aloud," and "Thinking Journals".

C. Students will develop lesson/unit plans appropriate for their subject areas that include effective instructional processes (especially evaluative measures), concern for transfer of thinking to other areas and metacognitive awareness.

D. Students will assess the strengths and weaknesses of their own thinking and set goals for self-

development. Students will be able to assess the strengths and weaknesses of another person's thinking and draw conclusions for future development.

E. Students will demonstrate knowledge of the nature (including specific skills/dispositions), causes, developmental aspects of, environment for, models and strategies for and rationale for teaching thinking.

F. Students will be able to identify, analyze and evaluate the nature of good thinking in themselves and others and draw appropriate conclusions for future development.

In the Spring, 1988, students who had been prepared to infuse critical thinking into their teaching began working in public school classrooms in their full semester senior internship. These students were placed with clinical adjunct faculty from the clinical districts who had themselves been working toward teaching for critical thinking. Supervision of these students was carried out by faculty most closely associated with the project. Beginning in 1989-90, the course "Teaching for Critical Thinking" was required of all certification students. Ultimately, if the project succeeds, teaching for critical thinking will become a part of all courses in the professional sequence, and the discrete course will no longer be needed. A chart showing the scope and sequence of the project is included as an appendix.

The Future: Institutionalization and Evaluation

The funding to undertake the projects described in this paper is assured for a period of three years. While it is likely that funding will continue beyond that point, a commitment has been made to institutionalize and continue key elements of the project. These are:

1. Assuring that students graduated from the program are competent to teach for higher order thinking/critical thinking within the subject areas they are certified to teach.

2. Assuring that faculty are sensitive to teaching for critical thinking and evaluate the performance of students within that context.

3. Placing students in schools within clinical districts in which there is a senstitivity to teaching for critical thinking.

4. Selecting clinical adjunct faculty in cooperation with clinical districts who have been identified by both the College and districts as outstanding teachers and who have participated in training programs designed to improve teaching for critical thinking.

5. Involving clinical adjunct faculty and school district administrators in the policy decisions affecting the teacher education program.

One fiscal step has been taken to insure institutionalization. In New Jersey the fee paid cooperating teachers has traditionally been generated from fees paid by students. In the past this has been a one-time fee of $60 paid at the beginning of the senior internship. Fifty dollars was then paid to the cooperating teachers and the balance used to defray administrative costs. Beginning in September, 1990, the fee will be raised to $100 and supplemented by the college so that clinical adjunct faculty are paid $300 for their work with students in the pre-student teaching experience and for their work as cooperating teachers during student teaching. The fee paid for training will, it is anticipated, come from regular operating funds of the Institute for Critical Thinking.

A number of process and outcome evaluations have been put in place to assess the effectiveness of the project and assure compliance with the original goals. First we need to assess the quality of the relationships developed with the clinical districts and the degree to which they have moved toward teaching for critical thinking within the schools. At the very outset of the project significant time was spent considering the change strategies which began to appear in the literature in the early 1960's and derived primarily from work in organizational psychology and sociology. Many of these works included "models" intended to guide the change process. By any standards, teaching for critical thinking is one of the more difficult innovations to implement because it involves changes in the classroom behavior of teachers and, for some, a basic reconceptualization of the purposes of education and the teaching/learning process. On the other hand it is an innovation with enormous attractiveness which is difficult to disagree with on its face. That is, it is difficult to argue that the primary purposes of education include having students undertand and use the content of the curriculum rather than memorize it. It is difficult to argue with the idea of improving the judgments students make, or the professional judgments teachers make. We had to be certain that our own commitment to the idea did not cloud the need to work diligently on implementing the change or to assume that it would be easily accepted. Miller (1967) suggested in one of the early important works on change that the idea that "a good idea will succeed on its own" often causes innovators to ignore important steps in the change process. An extension of this idea is the myopic presumption of inventors that their "new" idea is so obviously wonderful and likely to revolutionize the schools that the mere mention of the idea to educators will send them running in a frenzied state to the

nearest classroom to begin the faithful implementation of the idea. A related problem is that innovators tend to be so close to the idea that they fail to recognize that it may be difficult for others to understand. Their investment in the idea often causes them to view resistance as though it were treason. All these potential pitfalls are real for the implementation of critical thinking. It is an idea widely embraced by the public schools, but one with so many interpretations and meanings that two schools claiming to teach for critical thinking may look very different from each other.

Taking into account these concerns and recommendations from the change models several important strategies were attended to and degree to which the strategies were followed constitutes part of the process evaluation of the project. Specifically, the strategies and assessment of degree of implementation are as follows.

1. *Securing the cooperation of key district administrators.* While the initial contacts were with superintendents, it became clear that others in the district were as critical if not more critical to success of the project. In each case the appropriate administrator, whether it be the curriculum specialist, the staff development specialist, or the personnel officer was identified and invited to participate in planning and other activities. Ultimately, as teachers were selected, principals were involved as well.

2. *Prevention of domination of the project by the higher education unit.* A danger always exists in cooperative ventures between higher education units and school districts of one level dominating the other. Most often it is the higher education unit that controls the situation. In this case, careful role definitions and expectations were identified and have been followed through the project.

3. *Provision of adequate follow-up.* There is always the temptation to provide training and then assume faithful implementation. As the project developed, more follow-up was provided than originally planned at the request of the participants. Meetings during the academic year between clinical adjunct and the college trainers and classroom visits were scheduled to discuss implementation problems and successes.

4. *Provision of adequate incentives for participants.* For the clinical adjuncts, appointment to the college faculty in a newly defined role along with enhanced payment seemed adequate to attract and keep a pool of interested individuals. The provision of in-service education within the districts seemed important to district administrators. In general, these key strategies continue to be followed in the project.

In addition, several evaluators employed by the Institute for Critical Thinking review and evaluate the activities of the project within the context of adherence to the work plans developed by the Institute.

The evaluation of our students is a more complex and difficult task, but obviously an important one. Some pre-assessment of students experience with instruction for critical thinking within their program was undertaken through an interview process. Questions like *What does it mean to think in your subject area? What instructional strategies for teaching thinking have you learned? Did your instructor model the thinking processes discussed?* were asked of students before the project began. Similar questions will be asked of students at the conclusion of the project.

A second dimension of evaluation of students revolves around their performance in the classroom. Revision is underway of the standard instrument for the assessment of student teachers to incorporate specific strategies for critical thinking. The instrument will be used with pilot students as well as students in the program not receiving specific instruction for critical thinking, and an analysis of the differences undertaken.

To the extent possible, students in the classes of our student teachers will be assessed. Specifically, where district cooperation can be secured, the project evaluation will look for gains in reading comprehension that parallel the results attained with the College's in-service programs in the teaching of thinking.

Finally, there will be continuous assessment of the quality of the experience students have and the effectiveness of both clinical adjunct faculty and College supervisors. Data for this assessment will be routinely collected from all participants.

Conclusion

Teaching for critical thinking is an important movement that has captured the attention of school districts across the country. Success in improving the performance of students on standardized tests through working with their teachers on critical thinking strategies has been demonstrated. Colleges preparing beginning teachers need to assess their programs to be certain students being prepared are capable of working in settings with a focus on critical thinking.

The Montclair State College Model represents a collaborative effort with public school districts designed to enhance the ability of the College to select the best cooperating teachers, designated as clinical adjunct faculty, involve public school teachers more systematically in policy formation for the teacher education program, and to incorporate teaching for critical thinking in its teacher education curriculum as well as within the curricula of the clinical districts.

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